## Flight

# ACM – 08x

## Mission

## Introduction to High Aspect Maneuvering

# Flight Brief

- **ORM**
- **QOD**
  - NATOPS
  - EP
  - SOP
- **BRIEF**
  - Training rules
  - In-flight emergencies
  - High aspect ACM
  - One-circle engagement
  - Two-circle engagement
  - Energy management
  - Controlling the merge
  - Out-of-plane maneuvering

- **DEMO**
  - High aspect one-circle management
  - High aspect two-circle management
- **Introduce (Neutral maneuvering)**
  - High aspect one-circle management
  - High aspect two-circle management
  - Neutral abeam start
  - Neutral butterfly start
  - Neutral unknown start (BVR)
  - High aspect one-circle engagement (nose-low entry to initial merge)

# High Aspect Focus

- **Aggressiveness…..Kill the bandit!**
- **Determine Flow**
- **Evaluate the Bandit**
  - **Visual Cues / Energy Assessment**
- **Define Roles**
  - **Remember Offensive / Defensive game plans and transition as appropriate**

# Execution

**Keys to success:**

- **KEEP/REGAIN SIGHT**
- **Out of Plane Maneuvering**
- **Lift Vector Placement**
- **Airspeed Excursions**
- **Max Perform our Aircraft**

# Flight Brief (cont)

- Concepts & Definitions
  - In-Plane Flow: 1 circle vs. 2 circle
  - Out of Plane Maneuvering
  - Lift Vector Placement
  - Airspeed Excursions
  - Controlling Merges
  - Vertical Merges

  - Attack Gameplan
    - Ftr Turns Level
    - Ftr Nose Hi
    - Ftr Nose Low

# Butterfly Set

1

**“Take a cut away” “Shocker 2”**

2

**“Shocker 1, turning in” “Shocker 2, turning in”**

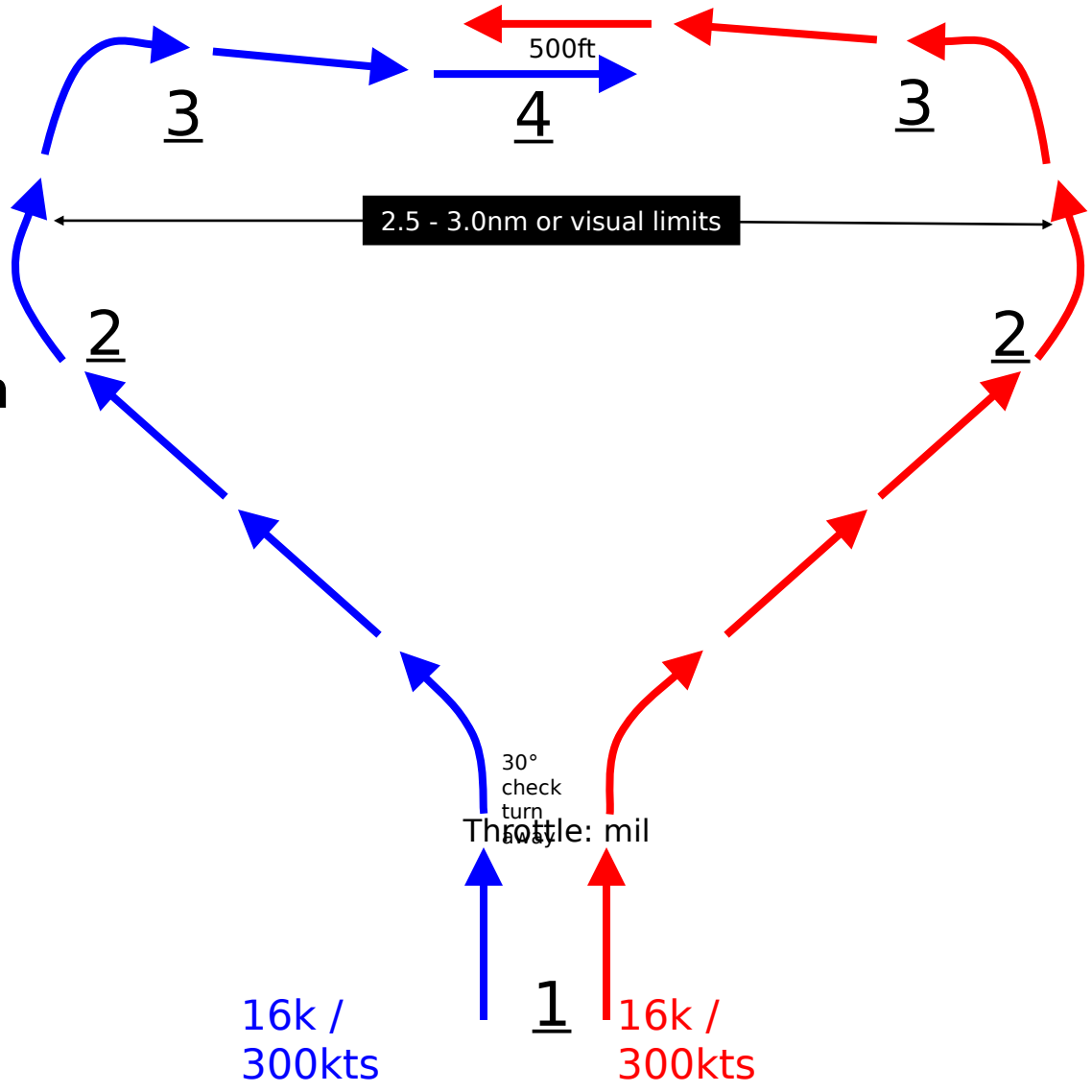
**Blind Gameplan**

3

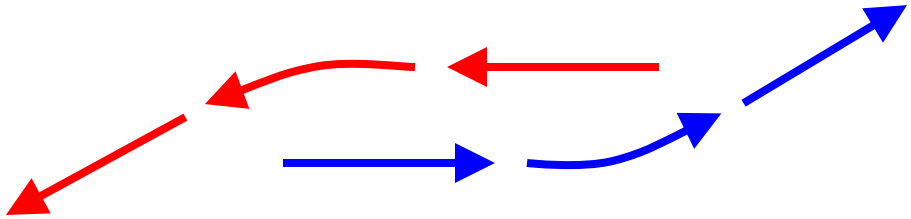
**“Left to left”**
**“Left to left”**

4

**“Fight’s on!”**
**“Fight’s on!”**



# Post-Merge Mechanics



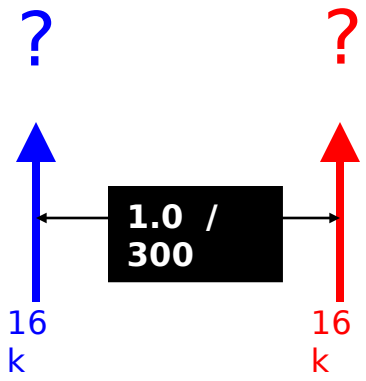
<u>30° check across tail</u>

- Keep sight
- Evaluate bandit’s energy state
- Set the flow
    * In Plane 1circle / 2 circle
    * Out of Plane

# Abeam Set

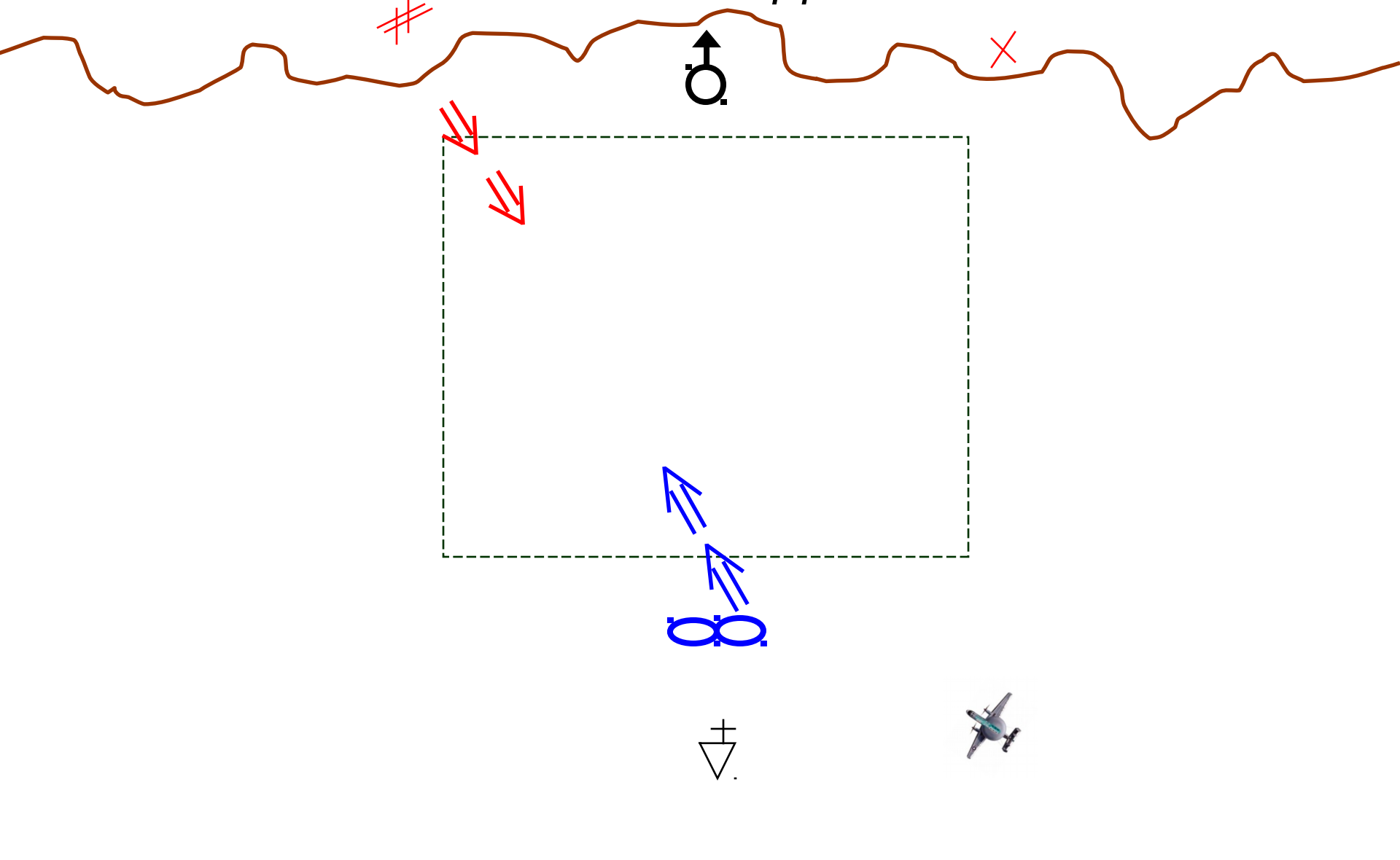
**“3……2……1……fight’s on!” “Fight’s on!”**

**Discuss up/down/level gameplan.**



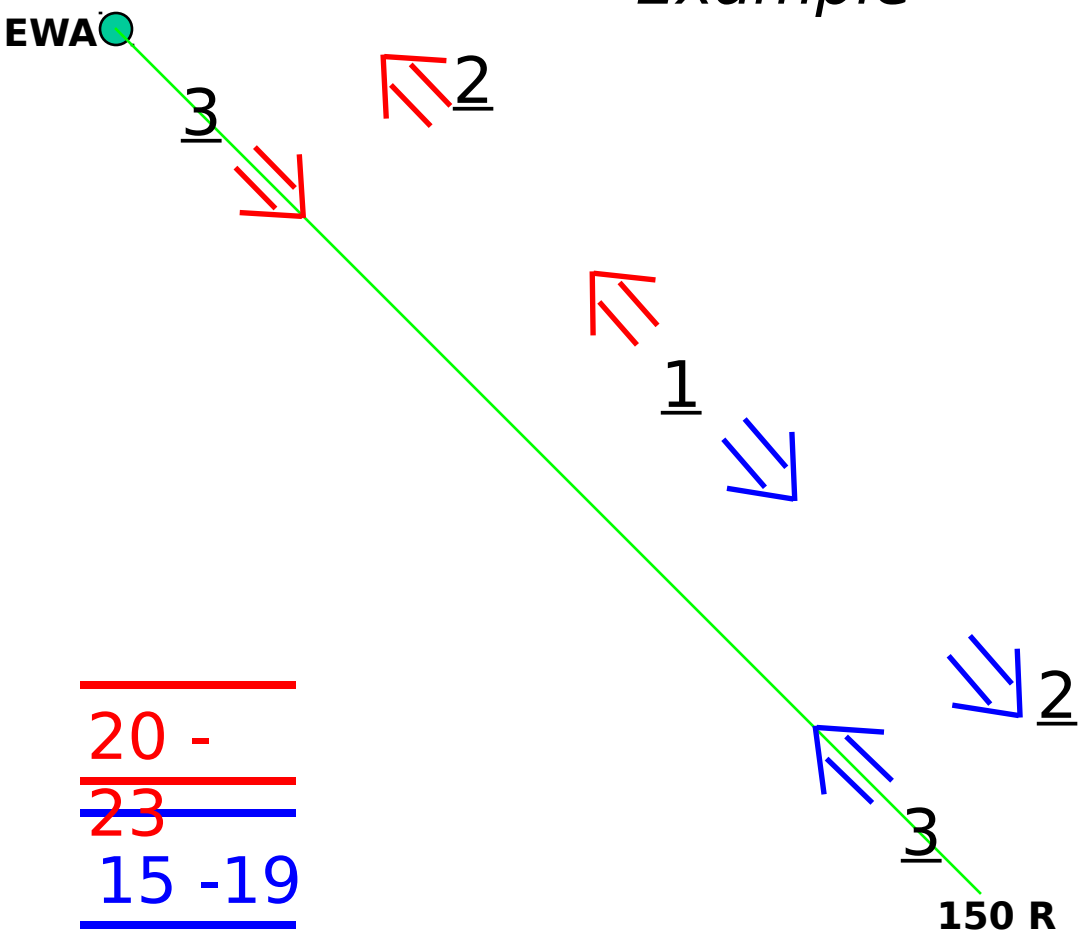
# Beyond Visual Range (BVR)

*Real world application*



# Beyond Visual Range (BVR)

*Execution Example*




20 - 23

15 -19

10 - 14

1 "Tiger 2, you're cleared to the south."
"Tiger 2."

2 "Bandit's established in the North."
"Fighter's established in the South."

@ > 10nm

3 "Bandit's turning in, fight's on."
"Fighter's turning in, fight's on."

"Screwtop, Picture."
"Screwtop, single group, (Bullseye) 150, 20, (low/high), hot, hostile."
"Tiger's commit."

@ 10 nm

"Bandit's in the block."
"Fighter's in the block."

@ 5 nm

"5 miles, eyes out."

When tally

"Tiger 2, tally 1, left 9 o'clock high (descriptive position of bandit) ....."
"Tiger 2 engaged 2 circle, left 12 thousand (describe the fight)."

# Flight Brief (cont)

- **FENCE out**
  - **Wingman initiates**
    - **“(Callsign) fenced out L/R, G’s & fuel”**

- **Unknown Airspeed Rdv**
  - **80%**
  - **250-300 kts**

# Recap

- Overall Flow
- Questions

# Coordination Brief

# ORM

- **Operational Requirements / Limitations**
  - **Crew Rest / Crew Day / Work Week**
  - **R&I**
  - **IP Currency (SOP)**
  - **Warm Up Eligibility**
  - **Previous Flight Incomplete? Determine Graded Items.**
- **Human Factors**
  - **Life Stressors / External Factors / Personal Problems**
  - **Medical Status (Rest / Nourishment / Hydration)**
- **Hazards and Controls**
  - **Routine**
  - **Weather**
    - **Current Observations and Forecasts**
    - **Crosswinds**
    - **Fuel Considerations**
  - **Mission Specific**

# TTO

- **Who will call a TTO?**
- **What situations will the TTO be called?**
  - **Safety**
  - **Confusion / Misunderstanding**
- **IP Responsibilities**
  - **Recognize need for TTO**
  - **Explanation / Instruction as necessary**
  - **Documentation on ATF**
- **When and how will training resume?**

# WARM UP CRITERIA

- **ACM IP < 750 HOURS IN STRIKE/FIGHTER AIRCRAFT**
  - **1 FLIGHT WITHIN THE PREVIOUS 6 DAYS**
  - **2 FLIGHTS WITHIN THE PREVIOUS 14 DAYS (1 FLT SHALL BE A DYNAMIC HOP)**

- **ACM IP > 750 HOURS IN STRIKE/FIGHTER AIRCRAFT**
  - **1 FLIGHT WITHIN  THE PREVIOUS 14 DAYS**
  - **2 FLIGHTS WITHIN THE PREVIOUS 30 DAYS**

- **SNA**
  - **ONE WARM UP EVENT MAY BE AWARDED WHEN THERE HAS BEEN A DELAY OF 6 CALENDAR DAYS SINCE THE LAST EVENT IN A PARTICULAR STAGE.**
  - **IF THE NEXT REGULARLY SCHEDULED CURRICULUM EVENT IS A DUAL FLIGHT, THEN THE EVENT IS BRIEFED AND FLOWN AS THAT FLIGHT**
  - **IF THE SNA'S PROFICIANECY AFTER THE DELAY IN TRAINING IS CONSISTENT WITH HIS NORMAL PROCRESS AND WARRANTS CONTINUATION IN THE MODULE OF INSTRUCTIONS, THE FLIGHT SHALL BE CONSIDERED A WARMUP OF THE LAST FLIGHT EVENT COMPLETED.**
  - **IF THE NEXT REGULARLY SCHEDULED CURRICUMUM EVENT IS SOLO, THE STUDENT SHALL BE AWARDED A WARMUP OF THE LAST COMPLETED EVENT.**
  - **<u>OPTIONAL WARM UP</u>: 7-13 DAYS.**
  - **<u>MANDATORY WARM UP</u>: GREATER THAN OR EQUAL TO 14 DAYS.**

# ADMIN

- A/C - ATC C/S - Tactical C/S - Crew
- TIMES (Brief / Walk / Marshal / Takeoff / Land)
- ATC Clearance
- Area
- NUMBERS (Line / T/O / Abort / RPM)
- Comm Plan – Primary / Aux
- Nav Plan
- LCLS
- Joker / Bingo

# ADMIN

## Launch

- Weather / NOTAMS / TFR / BASH
- Preflight / Start / Marshal / Taxi
- Takeoff ( 7sec or Section Go)

## Recovery

- 4 second Break, TG’s / Full Stop
- Instrument approach situations
  - Section approach / Flt sep on final?
  - RTB as singles?

# Tac Admin

- G Warm
- Fence Checks
- G’s and Fuel checks
- Knock It Offs
  - 17 unit pull to new heading
  - Reference 300 kts in climb
  - Fly to PADS for next set

# Flow

- **SSD 2 maneuvering x 2 non-maneuvering**
- **Warm-up set (Stud Choice)**
- **Butterfly Sets**
  - **2 circle / 1 circle demo *(Fighter sets 2cir out of plane nose low, Bandit level across horizon for 360deg then break down into fighter before merge. At merge, Fighter IP demos out of plane (>45 deg nose high) 1 circle flow until offensive role established)***
  - **2 circle do**
  - **1 circle do**
- **Abeam**
- **BVR**

# Emergencies

- Ground Emergencies
- Abort
- Rwy Dep / Gnd Ejection
- Radio/ICS failure
- Loss of Navaids
- Lost Plane / Lost Sight
- System Failures
- Disorientation
- Bird strike/ Midair
- SAR  procedures
- Ejection

# Training Rules

**ADMIN**

1. BRIEF DEPARTURE/SPIN, COMPRESSOR STALL PROCEDURES, AND CURRENCY – All in flight have flown: 1 in 6 and 2 in 14 (<750 hrs), or 1 in 14 and 2 in 30 (>750 hrs)

2. FACE-TO-FACE BRIEF OF ALL MANEUVERS FOR ALL PARTICIPANTS.

3. ACM WILL BE CONDUCTED IN AN AUTHORIZED AREA ONLY FROM 30 MIN AFTER SUNRISE TO 30 MIN PRIOR TO SUNSET.

4. ACM WX MINS:

    a. 5 miles visibility with a defined horizon.
    b. 11K' between broken/overcast layers.
    c. 1 NM horizontally and 2K' vertically from all clouds.
    d. ACM may be conducted above broken/overcast layer provided the highest layer is below 7K' AGL for solo events and 8K'AGL for dual events. The flight lead will then establish the hard deck 5K' above that layer and all A/C will acknowledge the new hard deck.

5. HARD DECK SHALL BE 10,000 FT AGL MIMIMUM.

6. SOFT SHALL BE 5,000 FT ABOVE THE HARD DECK.

    a. No sustained low speed/high AOA maneuvering (less than 120 knots AND more than 24 units) below the soft deck.

7. ALL AIRCRAFT MUST HAVE OPERABLE UHF AND ICS (MULTI-CREW) AND MONITOR GUARD.

8. CONFIGURATION CHANGES OTHER THAN SPEED BRAKES ARE NOT AUTHORIZED.

9. "G" AWARENESS MANEUVER REQUIRED PRIOR TO ACM.

**COLLISION AVOIDANCE**

10. MAINTAIN A 500' BUBBLE AROUND ALL AIRCRAFT.

11. ALWAYS ASSUME THE OTHER AIRCRAFT DOES NOT SEE YOU.

12. MAINTAIN THE ESTABLISHED TREND ON HEAD TO HEAD PASSES. WHEN NO TREND EXISTS, EACH AIRCRAFT SHALL GIVE WAY TO THE RIGHT FOR A LEFT-TO-LEFT PASS. TRANSMIT YOUR OWN INTENTIONS.

13. LOW AIRCRAFT IN A HORIZONTAL SCISSORS IS RESPONSIBLE FOR SAFE SEPARATION. NOSE HIGH GOES HIGH, NOSE LOW HAS COLLISION

**COLLISION AVOIDANCE (continued)**

14. NEVER INTENTIONALLY MANEUVER TO LOSE SIGHT (NO BLIND LEAD TURNS).

15. IF LOST SIGHT, TRANSMIT "BLIND" AND REMAIN PREDICTABLE. OTHER AIRCRAFT SHALL ACKNOWLEDGE WITH "CONTINUE" OR 'KNOCK-IT-OFF" AS APPROPRIATE, PROVIDING DIRECTIVE COMM AS NECESSARY FOR SAFETY OF FLIGHT. ONCE SIGHT IS REGAINED, TRANSMIT "TALLY."

16. UP-SUN AIRCRAFT IS RESPONSIBLE FOR COLLISION AVOIDANCE. IF DOWN-SUN AIRCRAFT LOSES SIGHT, BREAK OFF THE ATTACK, TURN AWAY FROM PREDICTED COLLISION BEARING AND BROADCAST "BLIND, SUN." UP-SUN AIRCRAFT SHALL ACKNOWLEDGE WITH EITHER "CONTINUE" OR "KNOCK-IT-OFF" CALL.

17. BREAK OFF ALL GUN ATTACKS AT 1,000', NO FORWARD QUARTER GUN ATTACKS (45 deg of target nose). CNATRA WEAPONS ENVELOPES APPLY.

**TERRAIN AVOIDANCE**

18. IN A DESCENDING FIGHT, THE OFFENSIVE (HIGH) AIRCRAFT SHALL MONITOR THE DEFENSIVE (LOW) AIRCRAFT'S ALTITUDE, ATTITUDE AND AIRSPEED AND BREAK OFF THE ATTACK PRIOR TO PUSHING THE DEFENSIVE AIRCRAFT THROUGH THE HARD DECK.

**TERMINATION**

19. ANYONE CAN CALL A "KNOCK-IT-OFF." EACH AIRCRAFT SHALL TERMINATE THE ENGAGEMENT, MANEUVER TO SAFETY AND ACKNOWLEDGE WITH THEIR OWN "KNOCK-IT-OFF." WATCH OUT FOR THE MID-AIR POTENTIAL FOLLOWING A "KNOCK-IT-OFF".

20. KNOCK-IT-OFF FOR ANY OF THE FOLLOWING:

    a. Any training rule is violated.
    b. Interloper (unbriefed A/C) enters the engagement area.
    c. Any OCF flight situation develops.
    d. G-LOC experienced or suspected. (Aircrew shall RTB).
    e. Radio failure/loss of ICS. An aircraft rocking wings is an automatic "knock-It-off."
    f. Bingo fuel state is reached
    g. Dangerous situation/loss of situational awareness/inadvertent IMC/possible overstress.
    h. Training objectives have been reached.
    i. Engaged aircraft crosses the border of the authorized training area.

# Questions ?

# STANDARD DEBRIEFING FORMAT

- The Flight Lead or Pilot-in-Command is responsible for ensuring all flight or crewmembers are thoroughly debriefed on the conduct of the mission utilizing the “S-P-B-E-MS-LL” format outlined below. (Refer to the CTW-1/CTW-2 Expanded Debriefing Guide for specific objectives).

I. Safety
II. Planning
III. Brief
IV. Execution
V. Mission Success
VI. Lessons Learned